CLAIMS

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is as follows:

1 1. A method of digital printing using error diffusion but without anisotropy
2 associated with error diffusion, comprising the steps of:
3 inputting an image,
4 choosing several rasters,
5 choosing several error diffusion algorithms along the chosen rasters,
6 creating digital images of the input image using pairs of a chosen raster
7 and a chosen algorithm,
8 performing weighted averaging of said digital images obtained along
9 the rasters, using some chosen set of weights to perform weighted averaging,
10 so that an average value at each pixel can be rendered at that pixel, and
11 generating a final image from the weighted average of said digital
12 images.

1 2. The method of digital printing as recited in claim 1, wherein the step of
2 generating a final image is performed by a black and white printer.

1 3. The method of digital printing as recited in claim 2, wherein the black and
2 white printer is capable of rendering more than two grey levels at each pixel.

1 4. The method of digital printing as recited in claim 2, wherein the black and
2 white printer is capable of rendering only two grey levels at each individual
3 pixel, and wherein the step of generating a final image further includes the
4 step of generating super-pixels composed of blocks of more than one pixel.

1   5. The method of digital printing as recited in claim 4, wherein the rendering

2   of any grey level is fixed and depends only on the grey level to be rendered.

1   6. The method of digital printing as recited in claim 4, wherein the criteria

2   chosen is a random choice of different ways to render a given grey level.

1   7. The method of digital printing as recited in claim 4, wherein the rendering

2   of any grey level is made using a preselected ordering of representations to

3   get the best possible image quality out of a printer or a family of printers.

1   8. The method of digital printing as recited in claim 7, wherein the preselected

2   ordering being made so as to either depend on the grey level being

3   represented.

1   9. The method of digital printing as recited in claim 6, wherein the criteria

2   chosen is based on information in the way grey level renderings are chosen.

1   10. The method of digital printing as recited in claim 1, wherein the step of

2   generating a final image is performed by a color printer.

1   11. The method of digital printing as recited in claim 10, wherein the color

2   printer can render more than two levels at each pixel in each color dimension.

1   12. The method of digital printing as recited in claim 10, wherein the color

2   printer can render only two color levels at each individual pixel, and wherein

3   the step of generating a final image further includes the step of generating

4   super-pixels composed of blocks of more than one pixel.

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1   13. The method of digital printing as recited in claim 12, wherein the

2   rendering at any color level is fixed and depends only on the color level to be

3   rendered.

1   14. The method of digital printing as recited in claim 12, wherein the

2   rendering of any color level depends on the color level to be rendered and

3   some other criteria chosen to enhance image quality.

1   15. The method of digital printing as recited in claim 14, wherein the criteria

2   chosen is a random choice of different ways to render a given color level.

1   16. The method of digital printing as recited in claim 14, wherein the criteria

2   chosen is a predetermined sequence of different ways to render a given color

3   level.

1   17. The method of digital printing as recited in claim 14, wherein the criteria

2   chosen is based on information in the way color level renderings are chosen.

1   18. The method of digital printing as recited in claim 1, wherein the several

2   rasters and the several diffusion algorithms are chosen from libraries of rasters

3   and algorithms.

1   19. The method of digital printing as recited in claim 18, wherein the libraries

2   can be updated.

1   20. The method of digital printing as recited in claim 1, wherein the step of

2   generating a final image is performed by a display device.

1   21. The method of digital printing as recited in claim 1, wherein the step of

2   weighted averaging is made with unequal weights.

1   22. The method of digital printing as recited in claim 21, wherein the unequal

2   weights depend on the image.

1   23. A digital printing system using error diffusion but without anisotropy

2   associated with error diffusion, comprising:

3   a scanner for receiving an input image and generating a digital image;

4   a library of rasters and a library of error diffusion algorithms;

5   a database of sets of weights for averaging;

6   data processing means for choosing from the library of rasters and

7   from the library of error diffusion algorithms several rasters and error

8   diffusion algorithms along the chosen rasters, said data processing means

9   creating digital images for pairs made by a raster and an algorithm and

10   performing weighted averaging of said digital images obtained along the

11   rasters, using some chosen set of weights from said database of sets of weights

12   for averaging to perform the weighted averaging, so that the average value at

13   each pixel can be rendered at that pixel; and

14   an output device connected to said data processing means for

15   generating a final image from the weighted average of said digital images.

1   24. The digital printing system recited in claim 23, wherein the output device

2   is a display device.

1   25. The digital printing system recited in claim 23, wherein the output device

2   is a printer.

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26. The digital printing system recited in claim 25, wherein the printer is a black and white printer.

27. The digital printing system recited in claim 26, wherein the printer is capable of rendering more than two grey levels at each pixel.

28. The digital printing system recited in claim 26, wherein the printer is capable of rendering only two grey levels at each individual pixel, and wherein the data processing means generates super-pixels composed of blocks of more than one pixel.

29. The digital printing system recited in claim 28, wherein the rendering of any grey level is fixed and depends only on the grey level to be rendered.

30. The method of digital printing as recited in claim 28, wherein the criteria chosen is a random choice of different ways to render a given grey level.

31. The method of digital printing as recited in claim 28, wherein the rendering of any grey level is made using a preselected ordering of representations to get the best possible image quality out of a printer or a family of printers.

32. The method of digital printing as recited in claim 31, wherein the preselected ordering is made so as to depend on the grey level being represented.

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1   33. The method of digital printing as recited in claim 31, wherein the criteria
2   chosen is based on information in the way grey level renderings are chosen.

1   34. The digital printing system recited in claim 25, wherein the printer is a
2   color printer.

1   35. The digital printing system recited in claim 34, wherein the printer is
2   capable of rendering more than two color levels at each pixel.

1   36. The digital printing system recited in claim 34, wherein the printer is
2   capable of rendering only two color levels at each individual pixel, and
3   wherein the data processing means generates super-pixels composed of blocks
4   of more than one pixel.

1   37. The digital printing system recited in claim 36, wherein the rendering of
2   any color level is fixed and depends only on the color level to be rendered.

1   38. The method of digital printing as recited in claim 36, wherein the
2   rendering of any color level depends on the color level to be rendered and on
3   some other criteria chosen to enhance image quality.

1   39. The method of digital printing as recited in claim 38, wherein the criteria
2   chosen is a random choice of different ways to render a given grey level.

1   40. The method of digital printing as recited in claim 38, wherein the criteria
2   chosen is a predetermined sequence of different ways to render a given grey
3   level.

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1   41. The method of digital printing as recited in claim 38, wherein the criteria

2   chosen is based on information in the way grey level renderings are chosen.

1   42. The printing system recited in claim 23, wherein the weighted averaging

2   performed by the data processing means is made with unequal weights.

1   43. The digital printing system as recited in claim 42, wherein the unequal

2   weights depend on the image.